Complete Summary

GUIDELINE TITLE

Head injury in children.

BIBLIOGRAPHIC SOURCE(S)

Singapore Ministry of Health. Head injury in children. Singapore: Singapore Ministry of Health; 2001 Mar. 38 p. [26 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Head injury

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Risk Assessment

CLINICAL SPECIALTY

Emergency Medicine
Neurological Surgery
Neurology
Pediatrics

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To suggest management priorities for children with head injuries
- To give guidelines to determine the need for imaging studies in children with head injuries
- To provide triage guidelines according to the severity of the head injury

TARGET POPULATION

Children with head injury

INTERVENTIONS AND PRACTICES CONSIDERED

Management/Risk Assessment/Prognosis

1. Resuscitation, including, ventilatory support and treatment of shock
2. Brief history of the event, including, type of injury, mechanism of injury (e.g., height of fall or speed of vehicle), and symptoms that have occurred since the injury (e.g., any loss of consciousness)
3. Medical history
4. Physical examination, including, vital signs, detailed head examination (e.g., check for scalp haematoma, depressed fracture, haemotympanum, fluid leaking from nose or ear), and neurological examination (e.g., eye, mental status, cranial nerve, and checking extremities for movement)
5. Glasgow Coma Scale
6. Imaging studies, including skull x-ray, computerized tomography of the head, magnetic resonance imaging of the head
7. Neurosurgical consultation
8. Hospitalization

MAJOR OUTCOMES CONSIDERED

Morbidity and mortality associated with head injury

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Level Ia: Evidence obtained from meta-analysis of randomised controlled trials.

Level Ib: Evidence obtained from at least one randomised controlled trial.

Level IIa: Evidence obtained from at least one well-designed controlled study without randomisation.

Level IIb: Evidence obtained from at least one other type of well-designed quasi-experimental study.

Level III: Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.

Level IV: Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grades of Recommendation

Grade A (evidence levels Ia, Ib): Requires at least one randomized controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation.

Grade B (evidence levels IIa, IIb, III): Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation.

Grade C (evidence level IV): Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates absence of directly applicable clinical studies of good quality.

Good Practice Points: Recommended best practice based on the clinical experience of the guideline development group.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Not stated

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Each recommendation is rated based on the level of the evidence and the grades of recommendation. Definitions of the grades of the recommendations (A, B, C, Good Practice Points) and level of the evidence (Level I - Level IV) are presented at the end of the Major Recommendations field.

C - The first step in the management and resuscitation of children with head injuries is the assessment and management of the A, B, C's, i.e., the airway, breathing and circulation (Committee on Trauma, American College of Surgeons, 1993). (Grade C, Level IV)

C - A quick and simple way to do a mental status examination in children of all ages is to use the AVPU (A - Alert, V - responds to Vocal stimuli, P - responds only to Painful stimuli, U - unresponsive) method (Committee on Trauma, American College of Surgeons, 1993). (Grade C, Level IV)

B - The conscious state of the patient, based on the Glasgow Coma Scale (GCS), is an important indicator of the severity of the injury. (Grade B, Level IIb)

GPP - A child with a minor head injury can be classified into low risk, medium risk and high risk minor head injury based on the history and the findings of the physical and neurological examination. (Good Practice Points)

B - A child with a low risk (see risk classification scheme, below), minor head injury does not require skull x-rays and can be discharged home to the care of a reliable caregiver. (Grade B, Level IIb)

B - Consider skull x-ray in a child who has a completely normal neurological examination but a large scalp haematoma that prevents palpation of the skull in order to rule out a depressed skull fracture (Lloyd et al., 1997; Committee on Quality Improvement, American Academy of Pediatrics and Commission on Clinical

Policies and Research, American Academy of Family Physicians, 1999). (Grade B, Level IIb)

B - A child with a medium risk (see risk classification scheme, below), minor head injury should be referred to the Emergency Department for assessment, observation and possible admission into hospital. (Grade B, Level IIb)

B - Children with high risk (see risk classification scheme, below), minor head injury should be admitted into hospital and be reviewed by a neurosurgeon. Resuscitation and cardiorespiratory stabilisation should be started immediately and computerized tomography scanning is mandatory. (Grade B, Level IIb)

B - Obtain computed tomography head scan for minor head injury (medium and high risk) with any of the following (Homer & Kleinman, 1999; Hahn & McLone, 1993; Feuerman et al., 1998; Shackford et al., 1992; Stein & Ross, 1990; Committee on Quality Improvement, American Academy of Pediatrics and Comission on Clinical Policies and Research, American Academy of Family Physicians, 1999):

- Loss of consciousness
- Altered mental status or confusion
- Glasgow Coma Scale score of 13 to 14
- Palpable depressed skull fracture
- Repetitive vomiting
- Focal neurological deficit or change in examination over time
- Infant with bulging fontanel and/or split sutures
- Concern about possible child abuse

(Grade B, Level IIb)

B - Children with moderate and severe head injury will require rapid evaluation and resuscitation at the Emergency Department with the involvement of the neurosurgeon. (Grade B, Level IIb)

Risk Classification of Minor Head Injury

Low risk

- Asymptomatic
- Mild or no headache
- Vomiting (less than 3 episodes)
- Glasgow Coma Scale score of 15
- Transient loss of consciousness (seconds)
- Scalp injury - bruise or laceration

Medium risk

- Loss of consciousness (greater than 1 minute)
- Progressive lethargy
- Progressive headache

- Vomiting protracted (greater than 3 times) or associated with other symptoms
- Post-traumatic amnesia
- Post-traumatic seizure
- Multiple trauma
- Serious facial injury
- Signs of basal skull fracture
- Possible penetrating injury or depressed skull fracture
- Possible child abuse
- Neonate or young child (younger than 2 years)
- Glasgow Coma Scale score of 13 to 14

High risk

- Glasgow Coma Scale score that is greater than or equal to 12, or involves a decrease of greater than or equal to 2 points, not clearly caused by seizures, drugs, decreased cerebral perfusion or metabolic factors
- Focal neurologic signs
- Penetrating skull injury
- Palpable depressed skull fracture
- Compound skull fracture

Grades of Recommendation

Grade A (evidence levels Ia, Ib): Requires at least one randomized controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation.

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Level IV: Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

CLINICAL ALGORITHM(S)

The original guideline contains a clinical algorithm for the management of paediatric head injury.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

A prompt and accurate diagnosis of the underlying pathology may be made and appropriate investigations ordered. Doctors may also take measures to prevent the development of secondary brain injury and seek neurological consultation when necessary.

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

These guidelines are not intended to serve as a standard of medical care. Standards of medical care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge advances and patterns of care evolve.

The contents of the guideline document are guidelines to clinical practice, based on the best available evidence at the time of development. Adherence to these guidelines may not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care. Each physician is ultimately responsible for the management of

his/her unique patient in the light of the clinical data presented by the patient and the diagnostic and treatment options available.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Audit parameters for this guideline should look at:

- Rate of request for skull x-rays in children with low risk, minor head injury
- Missed intracranial injury due to failure to refer to the Emergency Department based on neurological deterioration at subsequent attendance at the Emergency Department if initially seen at the primary healthcare level
- Missed intracranial injury due to failure to admit to the Neurosurgery Department based on neurological deterioration at subsequent re-attendance at the Emergency Department if initially seen at the Emergency Department

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Singapore Ministry of Health. Head injury in children. Singapore: Singapore Ministry of Health; 2001 Mar. 38 p. [26 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2001 Mar

GUIDELINE DEVELOPER(S)

National Committee on Neuroscience (Singapore) - National Government Agency [Non-U.S.]
National Medical Research Council (Singapore Ministry of Health) - National

Government Agency [Non-U.S.]
Singapore Ministry of Health - National Government Agency [Non-U.S.]

GUIDELINE DEVELOPER COMMENT

These guidelines on the management of head injury in children were developed as part of the Singapore National Committee on Neuroscience´s Paediatric Neurosurgery Programme through a Workgroup on Paediatric Head Injury.

SOURCE(S) OF FUNDING

Singapore Ministry of Health

GUIDELINE COMMITTEE

National Committee on Neuroscience Workgroup on Paediatric Head Injury

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Workgroup members: Dr. Seow Wan Tew (Chairperson); Dr. Angelina Ang; Assoc Prof Peter Manning; Dr. Ng Kee Chong; Assoc Prof Lee Wei Ling

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

An update is not in progress at this time.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the Singapore Ministry of Health Web site.

Print copies: Available from the Singapore Ministry of Health, College of Medicine Building, Mezzanine Floor 16 College Rd, Singapore 169854.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on October 25, 2001. The information was verified by the guideline developer on November 16, 2001.

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